

REVOLUTIONS

THE NEOLITHISATION OF THE MEDITERRANEAN BASIN: THE TRANSITION TO FOOD PRODUCING ECONOMIES IN NORTH AFRICA AND SOUTHERN EUROPE

WORKSHOP · OCTOBER 29–31, 2015



PROGRAMME · ABSTRACTS

Roundtable Workshop

Revolutions

**The Neolithisation of the
Mediterranean Basin: The
Transition to Food-Producing
Economies in North Africa,
Southern Europe and the Levant**

Thursday 29th to Saturday 31st October 2015

Topoi Haus, Dahlem
Hittorfstr. 18
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Introduction

The *Revolutions Workshop* will examine the transition from the Epipalaeolithic/Mesolithic to the Neolithic, and the emergence of food-producing economies in countries that border the Mediterranean Sea. Rather than discussing the process of domestication and the primary Neolithic Revolution of the Fertile Crescent, it aims to examine the subsequent processes of Neolithisation that spread over the broader region, sometimes referred to as the Second Neolithic Revolution. The chaired sessions within the roundtable workshop will begin with brief summaries of the papers, then focus upon discussion between the individual session participants before the broader group of roundtable participants and audience debates them.

The key issues that this workshop aims to address are:

- The reasons and temporal pace of change from non-food producing to food-producing groups.
- The extent to which indigenous changes within technology, storage and increasing sedentism characterise the transition to food production between the Epipalaeolithic/Mesolithic and the Neolithic, and the degree of any interaction between immigrant farmers and indigenous groups.
- The potential impact of wider and local environmental change upon the emergence of food-producing economies.
- The effects of human and object relationships; how did the introduction of farming change existing technologies and what impact did this new technology and objects have on human groups?
- The ecological, social, and cognitive consequences of tending animals and plants.
- The directionality of movement of human groups and animals within these contexts mentioned above.

To approach these issues the workshop has been divided into four main sessions: *Ecology, Plants and Animals*; *Cultural, Environmental and Technological Processes*; *Modelling Neolithisation*; and *Regional Perspectives on the Transition to Food-Producing Economies*. The application of scientific methods to address these themes will be focal to the workshop.

Programme

THURSDAY 29TH OCTOBER

17:30 Registration

18:00 Introduction and welcome to the Revolutions Workshop by Michael Meyer

18:15 Keynote lecture by Barbara Barich - *Rethinking the North African Neolithic: the multifaced aspects of a long-lasting revolution*

19:30 Reception

FRIDAY 30TH OCTOBER

08:30 Registration

09:00 Keynote lecture by Graeme Barker - *Where has 50 years of research on the Mediterranean Neolithic got us to?*

10:15 Opening of the Revolutions Workshop

10:20 Session one - Ecology, plants and animals – chaired by Eva Rosenstock

Veerle Linseele - *Early livestock in Egypt: the current state of archaeozoological research*

Elena Marinova - *Use of wild plant resources in the Early Neolithic: an indication for continuity between the Mesolithic and Neolithic plant based subsistence?*

11:00-11:20 Tea break

Giulio Lucarini and Anita Radini - *A disowned nobility: the role and exploitation of wild plants in North Africa during the Holocene, analyzed through an integrated functional analysis on stone tools*

Julie Dunne et al. - *The inception of dairying practices across Holocene North Africa: a combined archaeological, molecular and isotopic approach*

12:00 Discussion

Lunch 13:00-14:30

14:30 Session two - Modelling Neolithisation – chaired by Nick Barton

Katie Manning and Adrian Timpson - *The peopling of the “Green Sahara”. Modelling the demographic and dietary response to Holocene climate change*

Helen Dawson - *Caught in the current: maritime connectivity, insularity, and the spread of the Neolithic*

15:10-15:30 Tea break

Marcello Mannino et al. - *An isotopic view on the spread of the Neolithic in the central Mediterranean*

Marc Vander Linden et al. - *By sail and by land: comparing the maritime and inland streams of Neolithisation across the western Balkans*

16:10 Discussion

17:30 Keynote lecture by Fekri A. Hassan - *Ingenuity, contingency and exigency: a new model of the origins and spread of food production in southwest Asia and North Africa*

19:00 Delegates’ conference dinner

SATURDAY 31ST OCTOBER

09:30 Session three - Regional perspectives on the transition to food-producing economies – chaired by Steven Rosen

Nick Barton et al. - *The Epipalaeolithic prelude to farming in Morocco*

Jorg Lindstädter - *The Neolithic transition in northeastern Morocco*

Maria C. Gatto - *The Neolithisation process in Nubia: new and old data*

10:30-10:50 Tea break

Agnieszka Mączyńska - *Revolution(s) in Egypt. Over a century of research on the Egyptian Neolithic*

Joanne Rowland - *New perspectives and methods applied to the “known” settlement of Merimde Beni Salama, Western Nile Delta*

11:30 Discussion

Lunch 12:30-14:00

*14:00 Session four - Cultural, environmental and technological processes –
chaired by Maria C. Gatto*

Annett Dittrich - Revolutions of the (middle) Nile: the dynamics of a Holocene riverscape

*Karin Kindermann and Heiko Riemer - From complex hunter-gatherers in the Eastern Sahara
to the Early Nile Neolithic*

*Steven Rosen - The herding revolution in the desert: adoption, adaptation, and social
evolution in the Negev and Levantine deserts*

15:00-15:20 Tea break

*Noriyuki Shirai - Evolution and innovation in lithic technology in the course of the
development of agriculture in Neolithic Egypt*

G. J. Tassie - A multiple-scale approach to the Neolithisation of Lower Egypt

16:00 Discussion

17:00 Conference closing

Abstracts

RETHINKING THE NORTH AFRICAN NEOLITHIC - THE MULTIFACED ASPECTS OF A LONG-LASTING REVOLUTION

Barbara E. Barich (ISMEO, Rome [formerly Rome Sapienza University])

ABSTRACT

The renovated interest towards post-Palaeolithic societies and the theme of Neolithization in northern Africa, brings also a rethinking on various issues, true cornerstones of the past paradigms. Beginning with the same acceptance of the term “Neolithic” which until now has been criticized when referring to African contexts and the alleged anomaly of the food production process in Africa (Sinclair et al. 1993), there are numerous aspects that today should be reconsidered and placed in a new dimension.

The general appreciation of the role played by the Epipaleolithic antecedents, requires to consider the long development, as well as the regional aspects of the Neolithization process, excluding the possibility and correctness of a unifying definition of this important phenomenon. Actually, field investigations speak rather in favor of more differentiated traditions in the use of food resources, in the stylistic characteristics and, above all, in the chronology.

Faced with this variability, answering some questions is needed. What was the driving factor of change? Is it correct to continue assigning a major role to the environment or should we look at other factors, highlighting the revolutionary human and symbolic aspects of the process? It seems also mandatory asking what was the social dimension reached by the North African communities that made it possible to accept exotic food resources, which are a keystone of the new economy.

Even this last point has imposed a reorientation of the studies. In fact, current research cannot be limited to a simple recording of the presence/absence of certain goods unrelated to the local context, but the new awareness has to be put into an appropriate context. The vision of Africa as a closed system has long been refused (see Mitchell 2005), especially for the regions overlooking the Mediterranean. The study of the modalities in which the Near Eastern domesticates became part of the North African cultures, investigating reasons and ways of displacement, expands the horizon of research and refines the tools to reconstruct high resolution scenarios.

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WHERE HAS 50 YEARS OF RESEARCH ON THE MEDITERRANEAN NEOLITHIC GOT US TO?

Graeme Barker (University of Cambridge)

ABSTRACT

Fifty years ago, in 1965, Grahame Clark published two classic papers in *Antiquity* and the *Proceedings of the Prehistoric Society* in which he argued that the initial suite of ^{14}C dates from Early Neolithic sites in Europe suggested a spread of farming from the Near East into Europe in two major streams between around 6,000 BCE and 3,000 BCE, one from Greece to the Balkans, the Danube basin and the Atlantic seaboard, the other from Greece westwards across the Mediterranean. He further concluded that the spread was partly the result of farmers colonising regions sparsely occupied by Mesolithic foragers and partly a process of ‘acculturation’ whereby Mesolithic foragers adopted agriculture. The ensuing decades have witnessed an explosion in radiocarbon dates, material culture and biological data sets, transformations in archaeological science such as aDNA, isotope and residue analysis, and successive theoretical frameworks within which to interpret this array of data - yet much of the debate regarding the Neolithisation of the Mediterranean basin would still look very familiar to Grahame Clark. What do we and don’t we understand about this process, and how should the research agenda be developing?

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EARLY LIVESTOCK IN EGYPT: THE CURRENT STATE OF ARCHAEOZOOLOGICAL RESEARCH

Veerle Linseele (FWO-Flanders, KU Leuven and Royal Belgian Institute for Natural Sciences)

ABSTRACT

The paper will give a summary of the bone evidence for early livestock found within the borders of modern Egypt and its implications for the timing and routes of dispersal of domesticates. Well-known to Africanist archaeologists, the earliest possible livestock remains are the very controversial domesticated cattle bones from the 9th/8th millennium BC in the Nabta Playa-Bir Kiseiba area in the Western Desert. In the 6th millennium BC, more secure evidence for domesticated cattle appears there, together with caprine remains. The earliest archaeozoological evidence for livestock elsewhere in the Egyptian deserts - including the Fayum, as I have been able to confirm through recent research - also dates to the 6th millennium BC. At sites of this period, numbers of bones are generally extremely low and usually only caprines are present. The poor amounts of physical evidence at this point in time may be due to a problem of visibility of sites. Only from the 5th millennium BC, numbers of sites with domesticated animals dramatically increase, appearing also in the Nile Valley. Pigs are added to the faunal spectra and domesticated animals are now represented by significant quantities of bones. It is probably no coincidence that cultivated crops appear in the archaeological record at the same time. In general, the evidence for early stock keeping in Egypt shows large regional variation and seems to be mainly dependent on local environmental conditions.

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USE OF WILD PLANT RESOURCES IN THE EARLY NEOLITHIC: AN INDICATION FOR CONTINUITY BETWEEN THE MESOLITHIC AND NEOLITHIC PLANT BASED SUBSISTENCE?

Elena Marinova (Center for Archaeological Sciences-KU Leuven and Royal Belgian Institute for Natural Sciences)

ABSTRACT

Taking as starting point two case studies (one from South-eastern Europe and one from Northern Africa) the general question of continuity in the use of wild plant resources between the Mesolithic/Epipalaeolithic and Neolithic will be discussed.

The evidence considered here regards the use of wild plant resources coming from the archaeobotanical research at the site of Bukova Pusta, Middle Danubian plain, Romania, and Tell el-Iswid, East Nile Delta, Egypt. Archaeological research in the region of each of the sites suggests the persistence of Mesolithic traditions, but also their geographic positions allow tracing the cultural interactions with the Near East. They are both, in spite of the different bioclimatic conditions, situated in the proximity of rich in resources aquatic environments. Use of wild fruits or starch rich tubers, rhizomes etc. are visible in both areas. This paper is going to look at the evidence for the role of wild plant consumption in prehistoric communities of the two geographic regions and argue that it needs more attention and further analyses, as well as that it has been underestimated by identifying them as crop weeds or dung derived plants. It is difficult to estimate quantitatively the role of plant gathering in the Neolithic economy and diet, but the fact that the finds of gathered plants are quite frequent indicates that it has an established position in the Neolithic plant economy and could have roots already in existing Mesolithic traditions. Extending this research and integrating it with other archaeoscience disciplines would be helpful in gaining new dimensions on the interpretation Neolithic plant and food production.

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A DISOWNED NOBILITY: THE ROLE AND EXPLOITATION OF WILD PLANTS IN NORTH AFRICA DURING THE HOLOCENE, ANALYZED THROUGH AN INTEGRATED FUNCTIONAL ANALYSIS ON STONE TOOLS

Giulio Lucarini (McDonald Institute for Archaeological Research, University of Cambridge)
and Anita Radini (University of York)

ABSTRACT

The North African region offers up essential data for the study of the origins of the earliest forms of plant exploitation. Data available from several Saharan and coastal areas in the region have revealed that the arrival of domestic wheat and barley from the Levant and the Iberian Peninsula during the Mid-Holocene did not replace the exploitation of autochthonous wild plants.

The only Mid-Holocene contexts that have yielded evidence of domestic crop exploitation in North Africa so far are located in the Fayum Oasis and Nile Delta, in Egypt (Wendrich *et al.* 2010) and in the northern coast of Morocco (Morales *et al.* 2013). Both these regions have yielded charred macroremains of wheat and barley from ca. 7000 to 6700 BP. More recently, domestic wheat/barley starch granules and phytoliths were retrieved from dental calculus of individuals buried in two Sudanese cemeteries dated to at least 7000 years ago (Madella *et al.* 2014).

Differently, other contexts in North Africa, both in the Sahara and along the Mediterranean littoral, have yielded strong evidence of an intensive exploitation of wild plants (Barakat and Fahmy, 1999; Fahmy 2001, 2014; Lucarini 2014; Mercuri *et al.* 2001; Tanheiser 2011; Wasylikowa 2001; Wasylikowa *et al.* 1995).

Despite being located in two different eco-zones and being characterized by contrasting past environments, the Holocene deposits of the Haua Fteah cave (Cyrenaica), Libya, and Farafra Oasis (Egyptian Western Desert), have so far produced archaeobotanical assemblages exclusively made up of wild plants, among which are several species of millet (Barker *et al.* 2010; Fahmy 2001, 2014).

The same contexts have also yielded a good number of grinding elements, which, until recent times, had been analyzed only from a techno-typological point of view. The increasing number of grinding stones in the Mid-Holocene deposits of Haua Fteah and Farafra may indicate a certain level of behavioural change and the adoption of new economic strategies, relying more strongly on plant exploitation. This general assumption of a direct link between grinding tools and plant exploitation has recently been tested, and challenged, adopting an integrated approach of use-wear and organic residue analysis on stone tools. First, micromorphology and use-wear of the grinding stones from the Haua Fteah and Farafra have been analyzed with low power microscopy to help clarify their function. Moreover, residue analysis, and in particular starch analysis, only rarely applied in North African contexts, was carried out on samples of tools, in order to determine the types of plants processed by the Holocene communities (Lucarini *et al.* forthcoming; Lucarini and Radini in preparation).

Analysis from the grinding implements confirmed that a variety of wild cereals were harvested and processed for food in different North African contexts during the Mid-Holocene.

The importance of wild plants in the economy of North African prehistoric groups has often been underestimated, especially after the Levantine domesticated crops, the so-called ‘noble grains’ were imported into North Africa. Data coming from the investigated archaeological contexts show clearly how North African wild plants represented a primary source of food for thousands of years, a real ‘nobility’ that has been disowned for too long.

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THE INCEPTION OF DAIRYING PRACTICES ACROSS HOLOCENE NORTH AFRICA: A COMBINED ARCHAEOLOGICAL, MOLECULAR AND ISOTOPIC APPROACH

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ABSTRACT

A picture is now beginning to emerge of the widespread importance of dairying in the subsistence economies of Neolithic peoples. Faunal and biomolecular evidence from the Near East and across Europe now suggests that the adoption of dairying often occurs concurrently with the first exploitation of domesticates, albeit on varying scales of intensity and depending on local environmental, economic and cultural settings. This paper/discussion will explore the timing and spread of the exploitation of dairy products in a hitherto unexplored region, northern Africa, through a large scale molecular and isotopic analysis of *c.* 450 potsherds from Holocene sites in Algeria, Libya and Sudan. The results confirm that, despite separate pastoral trajectories and different prevailing palaeoenvironmental conditions, the exploitation of milk and milk products occurs contemporaneously (in the fifth millennium BC) in the Mediterranean, Nile Valley and Saharan North Africa.

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THE PEOPLING OF THE “GREEN SAHARA”.
MODELLING THE DEMOGRAPHIC AND DIETARY RESPONSE TO
HOLOCENE CLIMATE CHANGE

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ABSTRACT

The timing and development of Holocene human occupation in the now hyperarid Sahara has major implications for understanding links between climate change, demography and cultural adaptation. This talk presents new results which use summed probability distributions from calibrated ¹⁴C dates from 1011 Neolithic archaeological sites to demonstrate a major and rapid demographic shift between 10,500 and 5500 years BP. This event corresponds with the African Humid Period (AHP) and is sub-continental in scale, indicating climate as the prime factor driving broad-scale population dynamics in northern Africa. Furthermore, by providing a high temporal resolution proxy for effective carrying capacity our demographic curve offers an independent estimate of environmental change in northern Africa, indicating a temporal delay in the terrestrial response to atmospheric climate change. These results highlight the degree to which human demography is a function of environment at the appropriate scale of observation in both time and space. We also present preliminary results on a new demographic reconstruction of the Nile Valley, incorporating early dynastic ¹⁴C dates to examine spatial trends in the occupation of this region.

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CAUGHT IN THE CURRENT: MARITIME CONNECTIVITY, INSULARITY, AND THE SPREAD OF THE NEOLITHIC

Helen Dawson (Topoi Excellence Cluster, Freie Universität Berlin)

ABSTRACT

The earliest permanent settlement of the Mediterranean islands is largely a Neolithic phenomenon but recent archaeological investigations now point to earlier forms of “colonisation”. On current knowledge, pre-Neolithic colonisation involved the largest islands both in the western and eastern Mediterranean (Sicily, Sardinia, Corsica, Crete, and Cyprus), as well as an increasing number of smaller islands in the Aegean, where geographical configuration was conducive to early maritime exploration. These discoveries are filling existing gaps in the archaeological record but inevitably raising even more questions: what are the implications of an insular Mesolithic for our understanding of the maritime spread of the Neolithic? How reliable are the patterns we see in the islands’ archaeological record in terms of highlighting potential maritime routes of Neolithic expansion? When attempting to understand overall patterns of island colonisation, biogeography remains a useful explanatory framework for the earlier periods. After the Neolithic, an island’s size and distance were no longer key parameters affecting colonisation, as communities were more able to overcome geographical constraints and sustain long-term population through social interaction. Generally, because our data are mostly derived from surface surveys rather than excavations, it has been difficult to prove continuity between different colonisation horizons on individual islands, especially for the earlier phases. We are still far from having a clear picture of the degree of overlap and admixture between subsequent lifestyles on the Mediterranean islands; thus islands are generally considered to have undergone multiple colonisation, abandonment, and recolonisation events. Despite these challenges, this paper will draw on data from 150 islands, from Cyprus to the Balearics, to discuss a range of environmental, climatic, and socio-cultural factors which may have contributed to observed patterns in the colonisation and abandonment of islands during the Neolithic, and use these to reflect on the meaning we give to terms such as “colonisation”, “connectivity, and “insularity”.

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AN ISOTOPIC VIEW ON THE SPREAD OF THE NEOLITHIC IN THE CENTRAL MEDITERRANEAN

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ABSTRACT

Studies on the spread of farming across the Mediterranean Basin have focused on the mode of introduction or acquisition of the so-called 'Neolithic package' (i.e. pottery, cultigens, domestic animals). Research on the process of Neolithicization has generally concentrated on 'traditional' sources of archaeological data (e.g. archaeobotany and zooarchaeology), with recent contributions from palaeogenetic analyses aimed at establishing if animals were domesticated locally or not. The potential offered by isotope analyses, as sources of data on animal origins and diets that could throw light on the introduction and initial management of domesticates, is largely untapped.

In this paper we present the results of AMS radiocarbon dating and stable isotope analyses (carbon, nitrogen and sulphur) on bone collagen of domestic fauna from Neolithic levels at Grotta dell'Uzzo. These analyses provide us with new data on the timing, origin and management of domesticates at the inception of the Neolithic in NW Sicily. Preliminary results suggest that the establishment of agro-pastoral economies in the central Mediterranean involved the direct introduction of domestic animals by boat, probably from further afield than southern Italy or Greece.

Our results imply the existence of contacts through long-distance maritime voyages, highlighting the need to rethink the mode and trajectories of the dispersal of agro-pastoralism across the Mediterranean.

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BY SAIL AND BY LAND: COMPARING THE INLAND AND MARITIME STREAMS OF NEOLITHISATION ACROSS THE WESTERN BALKANS

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ABSTRACT

The existence of two streams of Neolithisation across the Western Balkans (along the Adriatic coast with the Impresso culture, and across the continent with the Starčevo-Körös-Criş complex) is a well-known trope of Neolithic studies. Yet, beyond the association of each stream with distinct archaeological complexes, the precise nature of their differences remains elusive. How do we describe and account for this variability? What are the factors at play? Are we, for instance, simply dealing with archaeological reflections of varied landscapes?

In order to answer these many questions, we have undertaken as part of a five-year ERC-funded project (EUROFARM, PI: Dr. M. Vander Linden) a thorough assessment of the literature in the Western Balkans (i.e. Croatia, Bosnia & Herzegovina, Serbia, Montenegro and neighbouring areas), a necessary but arduous task given the fragmented and uneven state of the documentation. So far, our efforts have focused upon the creation of a site gazetteer covering the entire region from c.10000 to 4500 cal BC, a review of all 14C dates, zooarchaeological and archaeobotanical records, plus field work undertaken in northern Bosnia and Herzegovina and south-eastern Montenegro.

As part of this conference, we would like to offer a first review of our results, with a focus on the radiocarbon record and the farming systems (zooarchaeology and archaeobotany). Radiocarbon evidence allows us to compare the pace and spatial structure of each stream, characterised by distinct tempos and magnitudes. Differences in preferences for animal and plant domesticates are also noticeable, and cannot be accounted for in mere ecological terms. Such systematic comparative assessment not only enables us to describe and interpret the distinct features of each stream but, beyond, to underline the potential existence of shared factors of which interplay eventually explains the variability observed in the archaeological record.

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INGENUITY, CONTINGENCY AND EXIGENCY - A NEW MODEL OF THE ORIGINS AND SPREAD OF FOOD PRODUCTION IN SOUTHWEST ASIA AND NORTH AFRICA¹

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ABSTRACT

The emergence of agriculture in the Levant, farming on the banks of the Nile and pastoralism in the Sahara were the result of cultural innovations in specific precarious small regions with pronounced ecological diversity in arid to semi-arid settings along climatic transition zones. Such “hotbeds” include in North Africa the coastal mountains and plains of Northwest Africa, the range and basins of the Saharan Massifs, the Nubian Desert at the fringe of the ITCZ belt, and the Nile Valley in southern Egypt. The Levant, however, is remarkable for extraordinary compacted ecological diversity.

Hotbeds of innovation and change are often in contact with other similarly blessed or afflicted communities. The Levant not only had access to the coastal communities of North Africa and the Nile Valley, but also to the rest of the “Fertile Crescent”. Historical developments in any region are thus the local expression of collective knowledge over a very large region (an antecedent cultural pool). However, developments in each region depend on local ecological potentialities, which are subject to climatic or human-induced changes. In each region, foragers within demographically interactive units developed their own historical trajectories. Although change is cumulative, choices taken at any one point in time, often for immediate contingencies, may lead eventually to structural transformations in society.

Responding to the Last Glacial Maximum (LGM), foragers in the Levant and North Africa took refuge in coastal mountains and the Nile Valley and other well-watered areas, where they maintained a mobile lifestyle, improved their food getting and extractive technology, and expanded their subsistence range. Global warming after the hyper-aridity of the LGM was associated with increased rainfall by 16,000 cal BP in some areas with a peak from 14,500 to 13,000 years ago. This was followed by a severe dry event (the Younger Dryas) from 13,000 to 11,500 cal BP). From 11,500 to 8200/7800 cal BP, the Levant and North Africa experienced long periods of rainfall. However, these long periods were interrupted with short spells of droughts. It was this setting of plentiful rain beginning 14,500 years ago and the repeated recurrence of droughts that led to novel social, ritual and subsistence innovations including pottery and cattle keeping in North Africa. In all areas, mobility and demographic flexibility combined with reliance, as a matter of insurance, on low risk, labour intensive foodstuffs were pursued.

In the Nile Valley, fishing and exploitation of aquatic resources provided an attractive solution to local droughts, and low or high Nile floods. In the Levant, the locally available cereal grasses were the most likely candidates for insurance food. For close to several millennia, dependence on predominantly mobile, foraging economy was favoured. However, the chance success of communities who exploited the well-watered patches of the Levantine corridor made a commitment to a sedentary and predominantly agricultural life attractive to

many communities by 10,000 years ago. However, the heavy ecological foot print of successful and ever-expanding early agrarian communities situated in a fragile and volatile habitat made them vulnerable to the unforeseen global cooling episode at 8200-8000 cal BP. Villages were abandoned and a change in scale became necessary. It was soon after that event that sheep and goats were introduced in the Egyptian Sahara.

The 8200-8000 cooling event signalled a period of declining rainfall that was to last until hyperaridity prevailed in the region by 5500-5000 years ago. During that interval, an outlier of Levantine agrarian economy was established in the Nile Delta, and within a millennium agriculture became the dominant subsistence activity in southern Egypt mixing Nile-based fishing techniques, Levantine staple foods, and Saharan cattle and ways of life. As the Eastern Sahara became progressively inhospitable, the range and basin massifs of the Sahara became the homeland of pastoralists and rock art.

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¹ In fond memory of Fred Wendorf

THE EPIPALAEOLITHIC PRELUDE TO FARMING IN MOROCCO

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ABSTRACT

The transition from hunter-gathering to farming followed a complex pattern in North Africa. The aim of this contribution is to discuss the period 15,000-12,500 cal BP when there is evidence from cave sites in Morocco of a major rise in the exploitation of certain food resources and the appearance of cemeteries. Of the questions that arise, one is whether these changes were influenced primarily by climatic factors while another is whether they coincided with a shift to a more sedentary form of existence, involving the settlement of larger groups of people and supported by an intensification in hunting and gathering practices possibly with some form of food storage. Such characteristics are normally only associated with farming societies that appeared in the region many thousands of years later. A related question of interest is why these precocious developments never evolved into fully fledged agricultural practices.

Using the cave of Taforalt as a major case study, we shall examine the changes that occurred in this pre-farming phase especially in relation to the very well-preserved cemetery and associated midden deposits in the cave. Our results suggest that a marked change in the use of the cave occurred around 15,000 cal BP, with the rapid accumulation of massive ashy midden layers known as the 'Grey Series' (dark sediments that include vast amounts of charcoal, ash, land mollusc shell, burnt bone and stone). Based on large numbers of radiocarbon dates we can demonstrate that the beginning of cemetery activity coincided with the build-up of the grey deposits. It is also clear that the cave was used before the middens formed but that the nature of occupation was different. Changes in diet – indicated by the intensive harvesting and processing of wild food resources - plus elaborate burials, sometimes of grouped individuals, containing red ochre and other grave goods confirms the complex social behaviour of these hunter-gatherer groups.

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THE NEOLITHIC TRANSITION IN NE-MOROCCO

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ABSTRACT

The Neolithic transition of Mediterranean Morocco is very closely connected to the Neolithisation of the Western Mediterranean. The most prominent features of this process are the occurrence of impressed pottery decoration as well as domesticated animal and plant species, all of which have their origins in the Near East. Beyond sharing these features with the European side of the Western Mediterranean, the Early Neolithic in NW-Africa provides some of its own characteristics, such as distinct pottery forms and decorations. Furthermore we observe some quite particular subsistence strategies that are well adopted to semi-arid environments. Systematic surveys in the Eastern Rif of Morocco resulted in the discovery of ten previously unknown sites for the Neolithic transition. Altogether 18 Epipalaeolithic and Neolithic sites were excavated. Next to the archaeological finds, particular focus was placed on recovery of material suitable for palaeoenvironment reconstruction. As a result, a detailed chronological framework for the Early Neolithic of the Eastern Rif of Morocco was established. Neolithic innovations such as pottery and domestic species begin around 7.6 ka cal BP, at which time plant cultivation is clearly documented for cereals and pulses; this represents the earliest evidence for Africa as a whole. The Early Neolithic ends at around 6.3 ka cal BP marked by the definite disappearance of *Cardium* decorated pottery. All evidence put together, it appears that climatic and environmental variability had significant influence on Holocene prehistoric occupation in NE-Morocco. In particular, we have now for the first time clear evidence for the impact of the 8.2 ka cal BP event (during the Epipalaeolithic), as well as for 6.6-6.0 ka cal BP interval (increasing aridity). However, the Neolithisation process itself does not seem correlated with any climate and environmental shift. In this context cultural phenomena are considered as driving forces behind this process. Since there is no data that would demonstrate a terrestrial expansion of the Neolithic west of Valencia, we conjecture that in this region the further distribution of Neolithic innovations is undertaken via maritime networks. The continuous occupation of coastal sites in Morocco, such as the Ifri Oudadane, leads us to assume that these networks may already have existed in the Epipalaeolithic period.

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THE NEOLITHISATION PROCESS IN NUBIA: NEW AND OLD DATA

Maria C. Gatto (University of Leicester)

ABSTRACT

Despite the adoption of Levantine domesticates by c. 7000 BP, in Africa there is evidence for local long-term trajectories toward domestication, with intensive management of both animals and plants. Archaeological evidence in Nubia is particularly abundant, to include domestic, funerary and ritual contexts dated from the Late Pleistocene to the end of the Early Holocene. This is particularly true for the management of aurochs and lately for cattle keeping. New and old data will be discussed with the aim to reconstruct the Neolithisation process in this key region, which not only includes the Nile Valley from Gebel es-Silsila to the Forth Cataract, but also the nearby deserts.

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REVOLUTION(S) IN EGYPT. OVER A CENTURY OF RESEARCH ON THE EGYPTIAN NEOLITHIC

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ABSTRACT

It is generally accepted among archaeologists that the introduction of cultivated plants and domesticated animals marked a fundamental change in people's lives and food production. V.G. Childe (1936) coined the term "Neolithic revolution", seeing this particular period as a break-through. However, the history of research on the Neolithic in Egypt is short. Over a hundred years ago, researchers' interests concentrated on investigating monumental remains of the great civilization of the Pharaohs. In this context, the acceptance of the existence of Prehistoric Egypt towards the end of the 19th century may be considered a revolution in the archaeology of this part of the Near East. Since then, archaeology of pre-Pharaonic civilizations has seen a number of revolutions great and small. Some of them completely changed, or rather turned upside down, our knowledge of the earliest inhabitants of the Nile Valley.

At the turn of the 19th and 20th century, research on Prehistoric Egypt was in its nascent stage. From the very beginning, two terms – Prehistoric/Predynastic and Neolithic – were closely interconnected. Already towards the end of the 19th century J. de Morgan (1896: 67-167) considered materials from most contemporary Predynastic sites (including Naqada and Ballas) to be Neolithic. In the opinion of W.M.F. Petrie (1901:28-29) the Neolithic encompassed a period below his famous "S.D. 60". The Neolithic was officially introduced in the periodization of Ancient Egypt, although attracting little interest. However, the 1920s and 1930s saw another revolution in the research of the period. Early sites in the Badari area, in Fayum, Merimde and Wadi Hof were discovered and excavated, providing new inputs for the discussion on the Neolithic and on the introduction of cultivated plants and domesticated animals. Equally important were contemporary works of V.G. Childe (1935) who took an active part in discussions on the beginnings of agriculture in the Near East and the development of Predynastic communities in Egypt.

The post-WWII period in Egyptian archaeology saw researchers returning to already known Neolithic sites and general intensification of excavation projects. New excavation methods and new dating technologies made it possible to obtain data shedding new light on the presence of the first farmers in Egypt. Undoubtedly, an important and revolutionary event was the introduction of radiocarbon datings into the Predynastic Egyptian chronology. As a result, the sequence of the known Neolithic cultural units, previously based on relative chronological methods, was modified (see Menghin 1961-63; Hassan 1985; Hendrickx 1999; Wengrow 2011; Tassie 2014).

The 1980s were the time of revolutionary discoveries of the oldest domesticated cattle in Africa in the Nabta Playa-Bir Kiseina area. Although these discoveries have caused great controversy ever since, they did change the way of thinking about the Neolithisation of Egypt

and the domestication process in Africa (Wendorf and Schild 1984; 2001; Klees & Kuper 1992; Smith 2013; Linseele et al. 2014).

The most recent years have seen important discoveries of remains of domesticated animals in the Eastern and Western Desert, new research projects in Lower Egypt (Sais; Merimde; Fayum), genetic analysis of the origin of domesticated plants and animals, as well as paleoclimatic studies. It has also been the time of new interpretations of the emergence of domesticated species in Egypt based on a number of theoretical approaches (Shirai 2006; 2013) or more comprehensive views on the Neolithisation of north eastern Africa (Smith 2013; Wengrow et al. 2014). However, our knowledge of the Neolithic and Neolithisation process in Egypt progresses at a pace that is slower than in the case of other issues involving the Near East (see Shirai 2006; 2013). We have to keep in mind the words of M. Zeder (2008), who treated north eastern Africa, including Egypt, as “an especially promising region for future research”. We need a new revolution: new discussions, new interpretations; and quite surely new, fresh revolutionary data is very much welcome.

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NEW PERSPECTIVES AND METHODS APPLIED TO THE "KNOWN" SETTLEMENT OF MERIMDE BENI SALAMA, WESTERN NILE DELTA

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ABSTRACT

The Neolithic settlement(s) of Merimde Beni Salama lie along what are today the fringes of the western Nile Delta. The area is unique in that it provides the earliest evidence for Neolithic settlement with mixed farming at the end of the 6th millennium BC in Egypt. Previous excavations, spanning from the 1930s until the 1990s, were successful in providing much data as to the domestic structures in which people lived, and the types of crops and animals they tended and hunted, but new perspectives and techniques have enabled us to reveal a much larger settlement – or settlements – than hitherto known, as well as providing new data on the changing environment, and human activities across the landscape, beyond the settlement(s).

This presentation discusses results of the recent research at Merimde Beni Salama (hereafter MBS), and highlights: 1) the suitability of the sheltered, wadi fan environment for settled farming towards the end of the 6th millennium BC; 2) the possibility of the presence of Epipalaeolithic groups in the wider area; 3) the size, nature and chronology of the Neolithic settlement/use of the wider landscape, including the timing of the use/decline of certain plants and animals.

Given that there remains an export ban on material from archaeological sites in Egypt, the possibilities of scientific analysis are limited, however, new excavations as part of the rescue projects at MBS are yielding new data that are offering up much new faunal, botanical and artefactual material to re-assess the timing of the arrival of domesticates into the region, and the development of the settlement(s). The fieldwork runs in tandem with a museum-based project in TOPOI (A-2-4 'The Neolithic of the Nile Delta'), which will allow for analyses not currently possible in Egypt to be implemented on museum-based samples in Europe (e.g. ¹⁴C and stable isotope). It is hoped that a combination of these analyses will allow us to start answering the questions of why, exactly when, and in what manner domesticated plants and animals start to be farmed in the western Nile Delta, and in also what changes occurred throughout the traditionally identified five layers of Neolithic occupation of the settlement(s) (Eiwanger 1992).

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REVOLUTIONS OF THE (MIDDLE) NILE - THE DYNAMICS OF A HOLOCENE RIVERSCAPE

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ABSTRACT

The Holocene is an important period of activity in the long sequence of the Nile valley formation, before modern conditions of an ‘exotic’ river without any significant tributary running over a distance of 2700 km was established. In antiquity it was the flower-shaped Nile delta branches that shaped the imagination of Egypt, while hydrologists view the present Nile as receiving the major input and flow energy at its ramified ‘roots’. However, in local contexts rivers cannot be studied as static landscape elements or systems but require a more dynamic view – an ‘archaeology of flow’ (Edgeworth 2011). An actual project on Mográt Island – the largest island on the Nile – involves soil and stratigraphical studies to reconstruct the dynamics affecting the Middle Nile Valley between 9,500 and 4,000 BC. Holocene landscapes differed significantly from present ones due to a higher input of rain water. A significant drop of river levels occurred during the 6th millennium BC resulting in a shift from the presence of cut-off ephemeral lakes to wide and open alluvial plains. Subsequently, settlement patterns changed from palaeo-island/shoreline to terrace occupation in the long term. As revolution means ‘change’ or ‘alteration’ in a broader sense, the sharp mid-Holocene oscillations of the Nile surely affected communities and altered their lifestyles. Since arable soils are the prerequisite for plant cultivation, it is argued that they were initially obtained from dried-up lake sediments at the higher river terraces before the annual flooding of lower areas was established. This would imply landuse patterns different from the later river-dependent irrigation. Traditional methods include rain-fed shifting cultivation in savannah grasslands (*hariq*) and controlled surface water storage (*hafir*). Though existing close to the River Nile, this would be quite in accordance to what has been observed for other areas in North Africa. Next to livestock watering these strategies promoted the cultivation of millets but must have also contributed to the early incorporation of cereals as recently evidenced for the Middle Nile (Madella et al. 2014).

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FROM COMPLEX HUNTER-GATHERERS IN THE EASTERN SAHARA TO THE EARLY NILE NEOLITHIC

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ABSTRACT

The beginning of food production in the Nile Valley appears as a highly complex and multicausal phenomenon, coinciding with a number of fundamental environmental and cultural changes. In all its facets, it can only be interpreted as a long-term, episodic process with various protagonists, and changing conditions for cultural contact and exchange. This together with the deficient archaeological data have yet hampered tracing even the basic lines and modes how, where, and when the Neolithic developed.

As viewed from the Saharan ecozone, especially from the Western Desert, two phenomena appear as of importance: Firstly, earliest domesticated animals occur in low percentages in Saharan hunter-gatherer communities, at latest from 6000 cal BC onwards, predating the earliest Neolithic at the Nile. It appears that this development goes along with a trend towards cultural complexity in hunter-gatherers showing a shift towards pottery production, more residential campsites, intensified plant exploitation, and the like. Secondly, in tandem with the beginning climatic trend towards aridity from the late 6th millennium onwards, Saharan core areas were abandoned and people retreated to more favored landscapes, such as the oases and the Nile Valley. Seasonal contacts between the oases and the Nile Valley are already evident for the periods predating the onset of dryer condition. Yet the almost identical lithic material of the Fayum Neolithic with the preceding sites in the oases and the limestone plateau signals that communities from the desert began to concentrate and settle down in the Fayum and possibly in other locations along the Nile.

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THE HERDING REVOLUTION IN THE DESERT: ADOPTION, ADAPTATION, AND SOCIAL EVOLUTION IN THE NEGEV AND LEVANTINE DESERTS

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ABSTRACT

Neolithisation in the Levantine deserts, that is, the rise of pastoral societies in the arid periphery of the Mediterranean zone, comprised a patchwork of cumulative adaptations, chronologically and geographically varying according to the specifics of environmental and historical circumstances. These adaptations affected all realms of society, including basic organization, symbol systems and ideology, economy and subsistence, and ecology. The process of Neolithisation, beginning with the evolution of small-scale tribal groups with subsistence systems based on pastoralism, but culminating with the crystallization of larger groups with deep economic links to the settled zone, was neither linear, continuous, nor based on some single threshold or defining variable. Instead, like the adoption of farming, it spanned several millennia and included complex formulations of social change.

Reducing a continuing and non-linear process to discrete stages for heuristic purposes, three basic stages or processes can be defined:

1. The initial introduction and adoption of domestic herds, primarily goat, into desert societies,
2. The reconfiguration of those desert societies from hunting-gathering to herding-gathering, with all the commensurate social and material tools and knowledge to effect that transition, and
3. The consequent demographic growth and intensification of production and ties to the settled zone, resulting in large scale tribal groups with deep ties to the developing urban and state societies.

The evolution of these social and ecological adaptations also engendered increasingly evident social divergence from the settled zone, not only in contrasts in subsistence and architecture, but in changes in symbol systems and behaviours, and in stylistic traditions.

These processes occurred superimposed on a backdrop of shifting environmental and climatic regimes. This varying backdrop affected the tempo of change, and did so differentially, depending on the specifics of geographic circumstances.

Finally, the evolution of herding societies in the desert did not occur in a vacuum. Interaction with settled society is archaeologically evident in a number of realms (e.g., material exchange, technological and stylistic diffusion, etc.) throughout the long period under discussion; however, these interactions varied in intensity and diversity. They too played key roles in the structure of the transition to food production in the desert.

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EVOLUTION AND INNOVATION IN LITHIC TECHNOLOGY IN THE COURSE OF THE DEVELOPMENT OF AGRICULTURE IN NEOLITHIC EGYPT

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ABSTRACT

Whereas it is known that Southwest Asian cereals and animals which had been domesticated in their places of origin were introduced into Neolithic Egypt, the difficulty of adapting the Southwest Asian domesticates to a different natural environment from their original habitats and the efforts which humans would have applied to make agriculture feasible and successful have not been well studied. It was indeed essential for people in Egypt to adapt the Southwest Asian domesticates to a challenging environment and to perform agricultural activities most efficiently by technological means. This presentation aims at understanding how the cultural transmission of the know-how of agriculture from Southwest Asia to Egypt occurred and how technological innovations were achieved by Egypt's first farmers, through the analysis of Neolithic stone tools from the Fayum in the light of cultural evolutionary theory. Given that the frequency of the occurrence of cultural transmission and innovation in stone tools depends on human population size, density and fluidity, and that the human population size, density and fluidity depend on the carrying capacity of an environment, research on this subject can also give important insights into the demography and environmental productivity in the Fayum at the time of the development of agriculture.

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A MULTIPLE-SCALE APPROACH TO THE NEOLITHISATION OF LOWER EGYPT

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ABSTRACT

Although the Neolithic sites of Merimde Beni Salama and El-Omari have been known about for over 80 years, explanations for the spread of farming to Lower Egypt have until recently focused on environmental determinism and migrations or the processes and choices of the local populations in becoming farmers. To understand the processes that were taking place it is essential to relate humans, objects, and environments at multiple scales (Robb 2013). The large-scale events that saw farming practices develop in the Levant and spread across Europe and Northeast Africa must be considered along with the changes occurring at a local-level. However, examining cultural changes over a large geographic area are not sufficient in themselves, these changes must be examined over both the long- and short-term if cultural change is to be better understood.

In Europe a general westward movement can be observed in the process of Neolithisation; spreading out from eastern Anatolia and the Levant (Özdoğan 2011; Robb 2013; Rowley-Conwy 2011), with both cultural-diffusion and population movements as active carriers (Fort 2012). The situation in North Africa is not quite as clear, although a general westward movement of pastoralism can be observed (Close 2002; Hassan 2000), the same cannot be said for agriculture, which appears to have spread southwards up the Nile, and also appears in Morocco at around a similar time. This pattern may partially be an artefact of archaeological research, but also appears to be one of changing environmental conditions.

To understand the advent of mixed farming practices in Egypt four sites or areas need to be studied: the Faiyum, Merimde Beni Salama, Omari and Sais. Various questions need to be asked of these sites, such as what were the local environmental conditions that allowed both agriculture and stock keeping to flourish and was there already a population present before the arrival of the domesticates? As there is an interval of some 3,000 years between mixed farming developing in the Levant and its arrival in Africa, the economic regimes present in the Southern Levant are examined to gain a greater understanding of the timing of the Neolithisation of Egypt. Using all these threads of evidence a clearer understanding of the dynamics involved in the Neolithisation of Lower Egypt is gained and presented here.

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